**Institut für Meereskunde**
**an der Universität Kiel**

**Date: 30.06.2003**

# Cruise Report

**Compiled by**:

**F.S.Poseidon** **Cruise No.: 297**

**Dates of Cruise:** from 17.04.2003 to 28.04.2003

**Areas of Research:** Physical, chemical, biological and oceanography

**Port Calls:** No

**Institute:** Institut für Ostseeforschung, Seestrasse 15, 18119 Rostock-Warnemünde

**Chief Scientist:** Dr. Thomas Blanz

**Number of Scientists:** 5

**Projects:** Time series station in the eastern Northeast Atlantic

**Cruise Report**

This cruise report consists of 7 pages including cover:

## 1. Scientific crew

| **Name** | **Function** | **Institute** | **Leg** |
|---|---|---|---|
| Dr. Thomas Blanz | Chief Scientist | IOW | 297 |
| Gerhard Lehnert | Mooring | IOW | 297 |
| Christian Blauscha | Mooring, Filtration | IOW | 297 |
| Sunke Schmidt | Mooring, CTD | IfM | 297 |
| Ulrich Kotthoff | Mooring, Filtration | IfG | 297 |
| | | | |
| **Total 5** | | | |

IOW Institut für Ostseeforschung Warnemünde, Rostock
IfM Institut für Meereskunde, Kiel
IfG Institut für Geologie, Universität Tübingen

*Chief scientist:*
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## 2. Research programme

The main objectives of POSEIDON cruise 297 were to investigate long-term variability of hydrographic and flow conditions and vertical particle fluxes at the time series stations KIEL276/L1 (Madeira Abyssal Plain) by

- Exchanging current meters and particle traps at site KIEL276 with additional CTD/rosette casts across the Azores Front.

- also provided an opportunity to analyse surface water samples, at high horizontal resolution, for microfauna and nonoflora across a wide variety of oceanographic regimes in the Canary Basin.

## 3. Narrative of cruise with technical details

R.V. Poseidon left Las Palmas on April 17 at 09:40 under perfect weather conditions with 22 °C and transited in direction (310°) of the mooring station (Kiel 276). During transit, we monitored salinity and temperature and pumped water for filtration through the shipboard seawater inlet. We started work in the first working area at April 17 at 13:00 with a 1500 m CTD Station (No. 59), followed the next two CTD-stations at 18:00 and 22:00. There occurred problems with the output signal from the fluoresence probe.

Friday April 18, we were engaged in four 1500 m CTD profiles (station no. 62, 63, 64, and 65). Freshening wind up to 6 with heavy cross swell.

Saturday April 19, weather conditions improving with warm air temperatures, low wind, and low swell. We covered four 1500 m CTD profiles on the transect (station no. 66, 67, 68, and 68).

Sunday April 20 (Easter), 8:00 started with the mooring station (no. 70). The mooring released and was picked up completely. End of station work at 12:10. All equipment on deck without any loss. The three moorings had completely rotated. Weather condition stable, wind force increasing. At 13:00 deep CTD-station (no. 71), unfortunately only 4860 m, limited by the length of cable on the winch. Wind and wave conditions were becoming bad, for this reason we abandoned our mooring position and sailed directly South.

Monday April 21 (Easter), at 9:00 we reserved our heading in direction to North back to mooring station. During this transect, we prepared buoyancy, the shackle ring and shackle connections.

Tuesday April 22, we arrived about 10:00 at our mooring position. Releaser test in 1000 m water depth (station 72), and at 12:00 start of the display of the mooring. 16:35 anchor stone to water, 17:40 descent of the head buoy. 18:30 end of mooring station (no. 74). 18:40 deep CTD-station (4850 m), 22:20 end of station, sailing in direction of the Azores.

Wednesday April 23, five CTD-stations were conducted (75, 76, 77, 78, and 79), at 22:00 sailing in direction to Faro/Portugal.

Thursday April 24, in the morning drop out the first CTD, because wind and swell were to strong. About afternoon advancement the weather conditions and conducted a CTD-station (no. 80).

Friday-Sunday April 25-27, CTD-stations were conducted (81, 82, 83, 84 and 85). Last CTD-station on Sunday at 8:00, and end of station work. Sailing to Faro.

Monday April 28, enter to port Faro at noon.

**4. Scientific report of the University of Tübingen** (Ulrich Kotthoff**)**
The major aim was the ascertainment of carbonate microfauna and nanoflora from the ocean water between the Canares, the Azores and Portugal with a special focus on surface water and the current from the Middle Sea.

Therefore samples were taken from several points of the Atlantic in this sector via CTD. These samples were taken from different depths: 1500 m or 1600 m, 1100 m (most probably reflecting the Middle Sea-current), 700 m, 300 m, 100 m, 60 m and 20 m and from the surface water. During the sampling, temperature and salinity was noted.

Usually 5 litres of each sample have been filtrated using a GF/F-filter, furthermore 3 to 5 litres have been filtrated using a RCV-filter. (All the filters had been weighted before the examination, so that it is possible to calculate the absolute weight of the nannoplankton on the surface.) Between the sampling points, surface water was taken and filtrated, again using both types of filters.

The filters are going to be analyzed at the IfG Tübingen. Especially the coccoliths and other nannoplankton will be examined. While the GF/F-filters are used to make examinations via microscope, the RCV-filters can be examined using a REM because of there plain surface.

**5. Scientific equipment: moorings and instruments**
**5.1 Moorings**
During Poseidon 297, the long term mooring K276/22 was launched after one year break.

***Table 2:*** *Poseidon 297 moorings recovered (R) and launched (L), Aandearaa RCM9/8/5/4 current meters, and particle traps*

| Site | Date | Position | W.-Depth / m | ID | Instruments, depth/m | Remarks |
|---|---|---|---|---|---|---|
| Kiel276/L1 | 20.April 2003 | 32°51.75‘N 022°01.39‘W | 5216 | V276_22 /IFMK | RCM8: 270, 500, 1000, 1600, 3000, 5185 Traps: 2000 (2), 3050 | R |
| | 22.April 2003 | 32°49.65’N 022°00.20’W | 5209 | V276_23 /IFMK | RCM8: 270, 500, 1000, 1600, 3000, 5185 Traps: 2000 (2), 3050 | L |

**5.2 CTD/rosette**
For the CTD-measurements, a Neil Brown MarkIIIB CTD (internal IFMK code NB2) was used during the Poseidon cruise. Pressure and temperature sensors have a pre-cruise

calibration in the laboratory, CTD salinity has an in-situ calibration using bottle data. The calibration procedures including data processing are described in Müller (1999).

### 5.3 Underway measurements

**PC-Log**

A PC-based programme package, PC-Log, is used to log consecutively the data streams from navigational units, the ship's meteorological sensors, the deep sea echosounder and from the thermosalinograph. Standard ouput format is binary, but ASCII transformation is an option.

**Deep sea echosounder**

A 12 kHz echosounder by ELAC provides depth information, both as standard graph and as digital output. The sound velocity converting travel times to sounding depths was 1500 m/s. The digital output was input to the PC-Log system.

**Thermosalinograph**

The digital output of the thermosalinograph raw data is transferred to the PC-Log system where it is converted to physical units for temperature and salinity. The accuracy is 0.05 K and 0.2 for temperature and salinity, respectively. Delayed-mode corrections with near surface CTD data while on station, improve the accuracy estimates to 0.02 K and 0.15 for temperature and salinity, respectively.

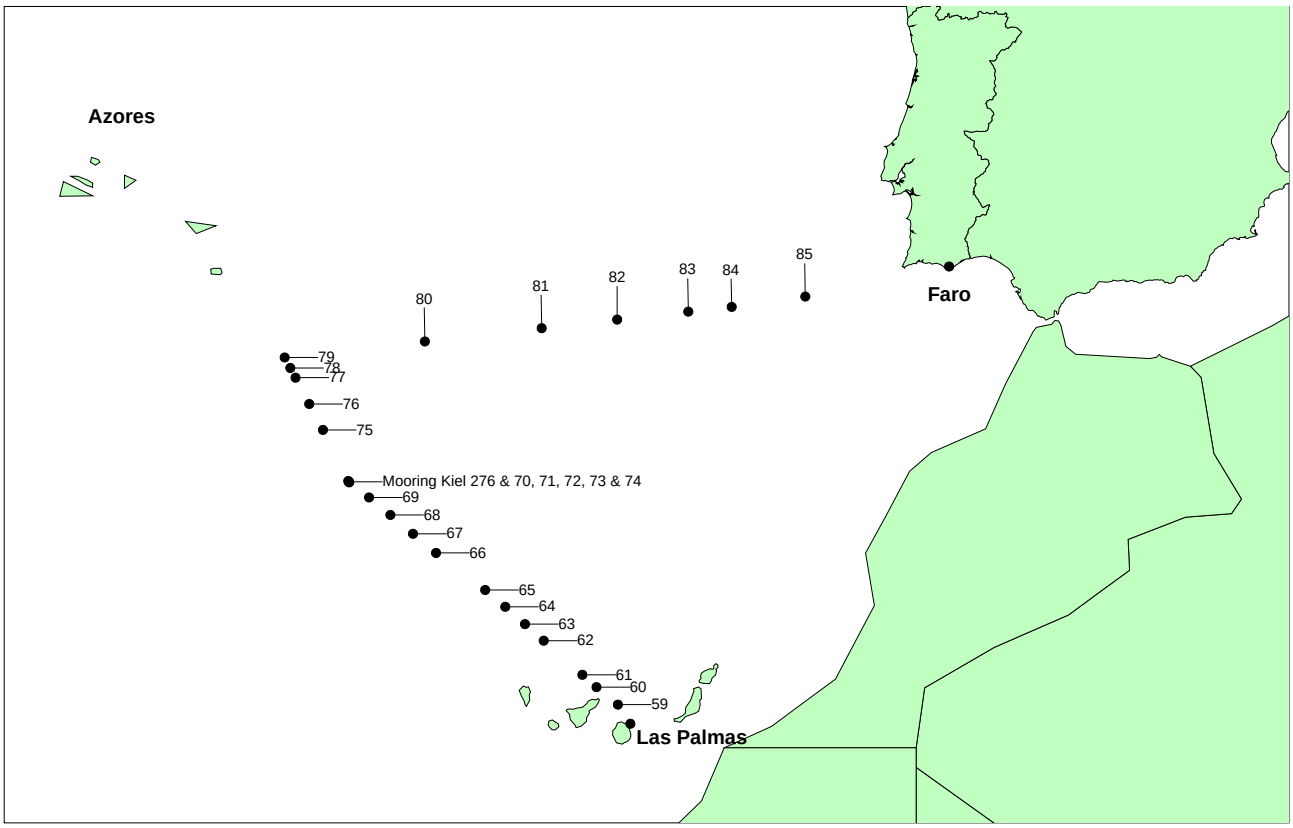
## 6. Additional remarks

We would like to thank Captain Mallon and his crew for their advised and help during this cruise.

## 7. Appendices

A. Map
B. Station list

Cruise track with stations



## Stations Occupied

**Table 1: List of CTD-Stations**

| Station | Profile | Year | Month | Day | Time | Latitude | Longitude | Depth | Max_P |
|---|---|---|---|---|---|---|---|---|---|
| 59 | 1 | 2003 | 4 | 17 | 13:08 | 28°30.30 | -15°41.03 | 3535 | 1495 |
| 60 | 2 | 2003 | 4 | 17 | 18:02 | 28°50.68 | -16°11.17 | 3308 | 1475 |
| 61 | 3 | 2003 | 4 | 17 | 21:56 | 29°05.16 | -16°31.19 | 3678 | 1010 |
| 62 | 4 | 2003 | 4 | 18 | 06:20 | 29°44.92 | -17°25.75 | 4200 | 1489 |
| 63 | 5 | 2003 | 4 | 18 | 10:58 | 30°04.27 | -17°52.11 | 4420 | 1485 |
| 64 | 6 | 2003 | 4 | 18 | 15:58 | 30°24.51 | -18°19.91 | 4425 | 1494 |
| 65 | 7 | 2003 | 4 | 18 | 20:58 | 30°44.03 | -18°48.24 | 4640 | 1480 |
| 66 | 8 | 2003 | 4 | 19 | 06:03 | 31°27.31 | -19°57.51 | 4708 | 1492 |
| 67 | 9 | 2003 | 4 | 19 | 11:00 | 31°49.63 | -20°30.15 | 4720 | 1061 |
| 68 | 10 | 2003 | 4 | 19 | 15:58 | 32°11.57 | -21°01.96 | 4902 | 1485 |
| 69 | 11 | 2003 | 4 | 19 | 21:00 | 32°32.06 | -21°32.19 | 5090 | 1486 |
| 71 | 12 | 2003 | 4 | 20 | 13:02 | 32°51.16 | -22°01.44 | 5216 | 4860 |
| 74 | 13 | 2003 | 4 | 22 | 18:43 | 32°50.30 | -22°00.33 | 5210 | 4853 |
| 75 | 14 | 2003 | 4 | 23 | 06:03 | 33°50.79 | -22°37.22 | 5330 | 1477 |
| 76 | 15 | 2003 | 4 | 23 | 11:00 | 34°21.12 | -22°56.59 | 5182 | 1601 |
| 77 | 16 | 2003 | 4 | 23 | 15:58 | 34°51.72 | -23°15.81 | 4872 | 1577 |
| 78 | 17 | 2003 | 4 | 23 | 18:30 | 35°03.08 | -23°23.18 | 5006 | 1555 |
| 79 | 18 | 2003 | 4 | 23 | 21:00 | 35°15.31 | -23°31.23 | 4544 | 1480 |
| 80 | 19 | 2003 | 4 | 24 | 15:10 | 35°34.02 | -20°13.32 | 5112 | 4850 |
| 81 | 19 | 2003 | 4 | 25 | 08:00 | 35°49.46 | -17°28.56 | 4602 | 4604 |
| 82 | 20 | 2003 | 4 | 25 | 20:00 | 35°59.48 | -15°42.06 | 3126 | 1679 |
| 83 | 21 | 2003 | 4 | 26 | 08:00 | 36°08.81 | -14°01.60 | 4391 | 4437 |
| 84 | 22 | 2003 | 4 | 26 | 18:00 | 36°14.29 | -13°00.37 | 4030 | 4113 |
| 85 | 23 | 2003 | 4 | 27 | 06:02 | 36°26.40 | -11°16.50 | 2985 | 2991 |